

AMATEUR SATELLITE REPORT

AMSAT's Newsletter for the Amateur Space Program.



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Challenger Ready; Hams Poised For H.I.S. #2!

At press time the space shuttle Challenger was ready for its 12 July launch while tens of thousands of hams the world over checked and rechecked their two-meter equipment for the second-ever Ham-In-Space mission: the flight of Tony England, W0ORE and John-David Bartoe, W4NYZ.

Continuous operation of the 2 meter SSTV downlink, interspersed with CW IDs, were to serve as a beacon for tracking. Otherwise, a very modest operating schedule was contemplated; this required because of the rigorous work schedule for both astronaut-hams.

In this ASR are stories on various aspects of the H.I.S. story:

- The STS 51F mission of W0ORE and W4NYZ
- A possible follow-up mission this October by two German astronauts
- Tracking a University of Iowa experimental satellite released by 51F which uses a 400 MHz telemetry frequency
- Two hams are among 10 finalists in teachernaut competition
- Other H.I.S. Astronauts wait in the wings

Plan: "Operate As Work Schedule Permits"

Planning for the Ham-In-Space aspects of the 51F mission indicates a modest operating schedule dictated by the constraints inherent in an ambitious work schedule. This is the word from NASA spokesman Chuck Biggs, KC5RG, as well as Tony England, W0ORE. Several dozen coordinated contacts with radio clubs and various youth groups were to have been arranged on confidentially held coordination frequencies. W0ORE has indicated his desire to maximize the youth interface on this mission as well as lower the level of intense QRM attending the W5LFL mission.

But while the total voice operating time was limited, the 51F mission will be on the ham air waves nearly continuously thanks to several improvements in 51F compared to W5LFL's STS-9 mission 2 years ago. This time, thanks to some excellent ground work by the Amateurs at the Johnson Space Center and other NASA centers, the W0ORE ra-

STS 51F Mission

Epoch time:	85195.81669658
Element set:	Rev. 3
Inclination:	49.5 deg
RA of node:	120.7914 deg
Eccentricity:	0
Arg of perigee:	330 deg
Mean anomaly:	30 deg
Mean motion:	15.61455314 rev/day
Decay rate:	2.5e-04 rev/day ²
Epoch rev:	32

NOTE: This set applicable to orbits 32 through 104 only.

dios will be on the shuttle power busses. Thus they will not have to rely on battery power as did Owen Garriott on his pioneering effort, the first Ham-In-Space in November-December, 1983.

For this mission Amateur Radio SSTV will make its debut in space. The video will be converted from the NASA fast-scan video on-board Columbia. Those on the ground with SSTV will be served a unique treat as the SSTV signals use the primary downlink frequency of 145.55 MHz. The SSTV will be interspersed with a MFM CW ID every few minutes. These signals will provide a handy beacon for those on the ground to track. Signals should be strong enough to copy on an HT when the Shuttle is even a few degrees above the horizon and at a range of several hundred miles.

The voice operating schedule was not firmed at press time. According to W0ORE, he will announce through Shuttle communications channels when he plans to operate. The announcements will be made one orbit ahead of time according to Tony's plan. The Shuttle audio will be carried live on a number of specially authorized stations around the nation. Primary among these will be the continuous operation of the Goddard Amateur Radio Club from the Goddard Space Flight Center, Greenbelt, Maryland. As previously reported in these pages, the Goddard club's call, WA3NAN, will be heard on a number of frequencies as follows: 14.295 MHz (continuous); 7.185 MHz days; 3.860 MHz evenings and nights. (See ASR 104 for additional frequencies and club operations.)

A number of frequencies have been announced for up-links despite the desire of certain mission planners to restrict access to the frequencies to facilitate the coordinated contacts. According to Westlink, if an open operating period is declared by WØORE, you should call him on 144.91, 144.97, 145.03, 145.63, or 145.69 MHz. Do NOT call on 145.55 MHz; that's HIS transmit frequency and he is not equipped to hear you there anyway!

University Plasma Package On 51F Signals at 400 MHz

The University of Iowa Amateur Radio Club is planning a special event station during the STS 51F shuttle flight to commemorate the second mission of the Plasma Diagnostics Package, PDP. The PDP is one of the science experiments carried by Spacelab 2 and was built by the Physics and Astronomy Department of the University of Iowa. The PDP is an independent spacecraft which is to be released by the shuttle for a free flight lasting several days. During this free flight it will make sensitive measurements on the ionospheric plasma and later be retrieved by the mechanical manipulator arm, stowed in the cargo bay and returned to earth with the shuttle. Details of the special event station are found in July QST, page 80.

The PDP has its own telemetry transmitter operating on 400.68 MHz with wideband PSK during its free flight period. Power output is about one watt so it should be easily heard from its low earth orbit (LEO). The University of Iowa Amateur Radio Club will QSL to any station reporting telemetry and or reception reports of PDP. Since the PDP will be flying close to Shuttle, the same tracking data provide for 51F will suffice for PDP.

Although the telemetry signal is a PSK subcarrier, there will also be an audio channel which will carry the output from a VLF receiver on PDP. This receiver was designed to detect whistlers and other "strange" VLF emissions that cannot be heard from the ground including plasma wave emissions that may be stimulated by the electron gun that will also be carried by the Shuttle. It should be possible to hear these sounds on an FM receiver tuned to 400.68 MHz.

QSLs may be sent to: University of Iowa Amateur Radio Club, 4900 Engineering Building, Iowa City, IA, 52242. (Thanks N8FGV)

Martha S., Office Manager, In Hospital

Martha Saragovitz, AMSAT's Office Manager and Corporate Secretary, entered Columbia Hospital for Women in Washington, D.C. 7 July for major surgery. According to OM John Shew, N4QQ, Martha underwent surgery on Monday afternoon, 8 July. The approximately one hour procedure was termed a complete success. The patient was said to have come through surgery well and was recovering Monday evening according to Shew.

Ms. Saragovitz was expected to remain in the hospital for up to a week with a subsequent extended convalescence at her parents residence in Washington. Get-well greetings



Phyllis Zwirko, XYL of K1HTV, displays AMSAT flag she made to fly on the Shuttle STS-51F mission with WØORE.

may be sent to AMSAT HQ (850 Sligo Avenue, Silver Spring, MD, 20910) or to the Saragovitz-Shew residence (9620 Sutherland Rd., Silver Spring, MD, 20901). A handsome bouquet was sent to her room by AMSAT on behalf of members.

Meanwhile, the AMSAT HQ office will remain open throughout the convalescence with a temporary gal Friday, Norma, holding things together. A special task force comprising K8OCL, WA6VGS, N4IFD and WA2LQQ were standing by at telephone distance to aid Norma in fielding the occasional unusual question or request.

Martha has been an AMSAT employee since 1978. The former school teacher was spotlighted in ASR #13, August 10, 1981.



Ken Miller, left, presents Radio Club of America check to AMSAT Chairman, W6SP. Presentation occurred at AFCEA Convention in Washington, D.C. June 5.



Dr. Robert Powers, FCC Chief Scientist, addresses the Ham Radio Luncheon, AFCEA Convention.



Robert Foosner, Chief, Private Radio Bureau, addresses the Ham Radio Luncheon, AFCEA Convention, June 5.

Short Bursts

- The ZRO-Memorial Station Engineering Award test run of 30 June and the special re-run of 3 July have yielded a bumper crop of super stations reporting the superior Z7 rating denoting successful copy at a level 21 dB below the Mode B beacon. Complete list of top finishers next time. The next on-the-air test will be in late September or early October when better pointing angles return to AO-10. South Africa AMSAT has expressed an interest in performing the ZRO tests for Region 1 and discussions are now proceeding in that direction. Volunteers for a Region 3 effort are sought according to WA2LQQ.
- After a scare, RS-8 seems to have returned to normal operation. It may have recovered or it may be a last gasp. Better watch this bird closely for signs.
- Rumors in Europe say the birth of ISKRA-3 is near. Prior ISKRAs, built by the Moscow Aviation Institute, were manually launched by ejection out the hatch of a Salyut space station. Sources indicate a 15 to 10 meter narrowband transponder is likely. RS-9 and RS-10 are due for launch late this year or early next year.
- Phase IIIC spacecraft is now scheduled for launch less than 11 months hence. Mid-June 86 is ESA's schedule. The launcher is an Ariane 4. Four transponders will be aboard: B, JL, L RUDAK (digital) and S.
- AMSAT is about to sign a contract with the Solar Energy Research Institute, SERI, in Golden Colorado for a facility in which to integrate Phase IIIC. A strong team is now functioning in the Boulder area under VP W3GEY. The Phase IIIC spaceframe recently arrived in Boulder having been shipped from Washington. W4PUJ had been doing some machine work on the spaceframe on his pool table in Virginia home until last week.
- JAS-1 launch has slipped 6 months until August 86.
- Many reports of Area Coordinators activities during the PR month of June are now filtering in. Details and photos

soon. Meanwhile, another bumper crop of Area Coordinators (AC) and Assistant Area Coordinators (AAC) has been announced: Harry Searles, KL7JHX, AAC for Alaska; Jim Roop, KØBI and Wendell Broome, K8OO, both AACs for Michigan; Jim Elder, KAØOOQ, AAC for Missouri; Col. John Clowe, W4ZPG and George Norton, W4EEE, both AACs for Georgia; John Ellison, KA8TSR, AAC for West Virginia. Congratulations and thanks to the new appointees.

PSK Demod Kit Proves Workable

Radiokit of Greenville, N.H. tells ASR the G3RUH PSK demodulator kits are selling well and that the earlier suspected problems have been resolved (ASR 102). Specifically, WA6YBT found that his problem with the unit was not the fault of the kit but rather with a poorly regulated power supply. He says a zener stabilized supply cured the problem. WA2KDL had problems traced to a solder bridge under an IC attributable to solder wicking up the plated-through holes. W6KAG built the unit from the article in *Ham Radio* magazine earlier this year and has had no problems.

Yet to become widely available is a software handler program to buffer and analyze the data. The PSK demod takes in 400 baud AO-10 telemetry and outputs 1200 baud data in compliance with RS-232C serial interface standard. WØPN had developed a fine s/w handler for the Atari 400. Now ASR learns from I8CVS that Dom has developed a s/w handler for the TRS-80. Contact him for details. Bob Wilson of Radiokit will be pleased to answer your questions on the G3RUH PSK kit. He says nearly 150 units have been sold. Contact him at Radiokit, P.O. Box 411, Greenville, N.H. 03048; 603-878-1033.

W3TMZ has also volunteered to act as a source of technical information on these units. Will this kit unlock the secret of AO-10's telemetry? Tune in and find out for yourself.



Jan King, W3GEY, AMSAT VP-Engineering, responds to a student question at ARRL HQ June 6. Jan and WA2LQQ were at ARRL HQ to support ARRL in U.S. Technical Training Institute (U.S.T.T.I.) symposium for foreign officials.

Two Hams Among Teachernaut Finalists

According to ARRL HQ, two hams are among the ten finalists competing to be the first citizen in space; the first teachernaut. All are practicing teachers responding to President Reagan's initiative to have a teacher as the first citizen in space. (See ASR #102).

The finalists cited to ASR were: David Marquart, WA7QKD, of Boise Idaho and William Townsend, WB1CRB, of Bar Harbor, Maine. There is some question about Townsend, however, as he did not appear on a list published by *Aviation Week* magazine, an authoritative industry source. The discrepancy was not resolved at press time.

AMSAT member Jeannine Duane, WB2MBW, of New Jersey who was also a candidate and one of 114 semi-finalists did not make the cut to the final ten.

More Astronaut-Hams Wait Their Turns

A number of U.S. and foreign astronauts are thought to be licensed amateurs or intent on obtaining their licenses prior to spaceflight in order to join the Ham-In-Space team, the ultimate ultimate DXpedition!

One already on-line and scheduled for flight is AMSAT member Dr. Ron Parise, WA4SIR, of Silver Spring, Maryland. As detailed in ASR #81 and 82 last year, Ron is due to fly in March 86, November 86 and July 87 on the three ASTRO mission.

Ron was notified of his selection in June of last year and has been in preparation for his flight next year ever since. He plans to have an Amateur Radio activity as part of his flight(s) as well. His proposal to NASA in this regard was recently submitted. Ron hinted it might contain some novel aspects but that he preferred to withhold details until

NASA officials had an opportunity to review and comment on the proposal.

Oktoberfest Auf der Shuttle?

Two German radio amateurs may be carrying a ham station aboard Flight 61-A this October.

The news was first reported in July 73 Magazine. It has since been confirmed through NASA/JSC by Roy Neal, K6DUE of NBC News. According to the story, Dr. Ernst Medderschmid, DG2KM and Dr. Reinhard Furrer, DD6CF, will be on board Shuttle Columbia for the Spacelab - D1 operation and hope to engage in cross-band, OSCAR transponder-type operation.

The equipment was reportedly built by the European electronics concern Robert Bosch Company. The radio is said to be capable of four 2 meter and eight 70cm channels. In addition to two-way FM QSOs whenever the astronauts are available, automatic logging equipment is planned for recording all received calls when they are busy with other Spacelab duties. The Bosch built package will also have a 1 watt 70cm beacon for determining when the shuttle is within your communications range.

The equipment to be carried by the two German astronauts appears to be designed for cross-band rather than in-band operation. A typical Mode B or Mode J station would appear required to permit QSOs. (Mode B is 70 cm up, 2 m down; Mode J is 2 m up and 70 cm down.)

Also scheduled to be on board Flight 61-A is Dutch astronaut Wubbo Ockles, who early last year had announced his intention to obtain a license and become the first European amateur to operate from space. Since his initial announcement, however, no further details have been provided. (Courtesy Westlink)

Satellite:	OSCAR-10
Catalog number:	14129
Epoch time:	85177.24870727
	Wed Jun 26 05:58:08.308 1985 UTC
Element set:	181
Inclination:	26.2601 deg
RA of node:	132.1838 deg
Eccentricity:	0.5966276
Arg of perigee:	23.5489 deg
Mean anomaly:	354.9935 deg
Mean motion:	2.05858162 rev/day
Decay rate:	-9.7e-07 rev/day ²
Epoch rev:	1532
Semi major axis:	26105.284 km
Anom period:	699.510763 min
Apogee:	35302.940 km
Perigee:	4152.674 km
Ref perigee:	2733.25546287
	Wed Jun 26 06:07:51.991 1985 UTC
Translate freq:	581.0047 MHz
Invert:	1
Beacon:	145.8100 MHz

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